"semiconductor substrate while minimizing the diffusion of dopant atoms" by use of "a pulsed beam of particles having a duration" of less than or equal to  $10^{-4}$  seconds, and between  $10^{-10}$  seconds and  $10^{-4}$  seconds, respectively.

There are numerous differences between what is claimed by the Applicants in amended claims 1 and 53 and what is disclosed by Asakawa. A summary of those differences are as follows:

Claims 1 and 53	<u>Asakawa</u>
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substrate: semiconductor insulating glass (quartz)

diffusion: minimized not minimized

source: pulsed particle beam continuous beam

coverage: small amorphous region entire surface of substrate

duration: not more than 10<sup>-4</sup> second none recited

The significance of these differences is highly relevant to whether or not what is claimed in claims 1 and 53 is obvious from Asakawa.

A <u>semiconductor substrate</u> is a **good thermal conductor**, <u>quartz</u> is a **poor thermal conductor**;

In the application of Claims 1 and 53 <u>minimization of diffusion is necessary</u> to not destroy the component being formed, <u>Asakawa's purpose</u> is to form a single crystal thus has **no reason to minimize diffusion**;

In the application of Claims 1 and 53 a <u>pulsed particle beam is necessary</u> to control diffusion, <u>Asakawa has no reason to control diffusion</u> thus he **no** reason to consider using of anything other than a continuous beam;

In Claims 1 and 53 a <u>small amorphous region</u> is the target of the pulsed beam, <u>Asakawa's</u> focus is the **entire surface**; and

In claims 1 and 53 the period of exposure is <u>not more than 10<sup>-4</sup> second</u>,

<u>Asakawa</u> does not recite beam duration since application **can tolerate seconds** 

of exp sure.

Additionally, each of Claims 1 and 53 call for the activation of the amorphous

region, whereas Asakawa's purpose is crystallization of a single silicon layer on the

surface of quartz. If the method disclosed by Asakawa were used on the substrate

called for in Claims 1 and 53, the intended final structure would be destroyed.

For all of these reasons Claims 1 and 53 as amended can not be said to be

obvious from Asakawa and thus Claims 1 and 53 are in condition for allowance.

Given that each of the other rejected claims are dependent from either Claim 1

or Claim 53, they too a patentably distinguishable from Asakawa.

All of the claims are now in condition for allowance.

Favorable action is respectfully requested.

Respectfully submitted,

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hv

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